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RESEARCH MEMORANDUM

TABULATED PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS MEASURED IN FLIGHT ON THE WING OF THE DOUGLAS D-558-I AIRPLANE FOR A 1 g STALL, A SPEED RUN TO A MACH NUMBER OF 0.90, AND A WIND-UP TURN AT A MACH NUMBER OF 0.86

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Langley Field, Va.

NATIONAL ADVISORY COMMITTEE
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SUMMARY

Tabulated pressure coefficients and aerodynamic characteristics are presented unanalyzed for six spanwise stations on the right wing of the Douglas D-558-I research airplane (BuAero No. 37972). The data were obtained in a 1 g stall at subcritical Mach numbers, in a speed run to a Mach number of 0.90 and in a wind-up turn at a Mach number of 0.86.

INTRODUCTION

As a part of the NACA High-Speed Flight Research Program, pressure-distribution measurements have been made over the right wing of the Douglas D-558-I research airplane (BuAero No. 37972) to determine the chordwise and spanwise loading at subsonic and transonic Mach numbers.

The data presented herein include a tabulation of the measured pressure coefficients and the calculated section and wing-panel characteristics obtained from a 1 g stall, at subcritical Mach numbers, a speed run to a Mach number of 0.90, and a wind-up turn at a Mach number of 0.86. In order that these data be made available at an early date, no analysis is included. An analysis paper including these data is being prepared.

SYMBOLS

$b/2$ wing semispan (12.5 ft)

$b'/2$ spanwise distance from row 1 to wing tip (10.1 ft)

c local wing chord parallel to plane of symmetry, feet

$\bar{c}$ average chord of wing panel, feet (S'/b')

c_n section normal-force coefficient $\left(\int_0^1 (-P_R)\,d\,\frac{x}{c}\right)$

$c_{m_{c/4}}$ section pitching-moment coefficient about 0.25 local chord point $\left(\int_0^1 (-P_R)\left(0.25 - \frac{x}{c}\right)d\,\frac{x}{c}\right)$

c_{m_x} section pitching-moment coefficient about a line perpendicular to longitudinal axis of airplane, passing through the 0.25 M.A.C. $\left(\int_0^1 -P_R\left(\frac{0.50c - 0.25\text{M.A.C.}}{c} - \frac{x}{c}\right)d\,\frac{x}{c}\right)$

$C.P._x$ wing-panel chordwise center of pressure, percent M.A.C.

$C.P._{y'}$ wing-panel lateral center of pressure, percent $b'/2$

C_{N_A} airplane normal-force coefficient (Wn/qS)

$C_{N'}$ wing-panel normal-force coefficient $\left(\int_0^1 c_n \frac{c}{\bar{c}}\,d\,\frac{2y'}{b'}\right)$

$C_{B'}$ wing-panel bending-moment coefficient about row 1 $\left(\int_0^1 c_n \frac{c}{\bar{c}}\frac{2y'}{b'}\,d\,\frac{2y'}{b'}\right)$

$C_{M'}$ wing-panel pitching-moment coefficient about the 0.25 M.A.C. $\left(\frac{\bar{c}}{\text{M.A.C.}}\int_0^1 c_{m_x}\left(\frac{c}{\bar{c}}\right)^2 d\,\frac{2y'}{b'}\right)$

g acceleration due to gravity, 32.2 feet per second^2

[redacted]

M	free-stream Mach number
M.A.C.	mean aerodynamic chord of the wing (6.21 ft) $\left(\frac{2}{S}\int_0^{b/2} c^2 dy\right)$
n	normal load factor
p	local static pressure, pounds per square foot
p_o	free-stream static pressure, pounds per square foot
P	pressure coefficient $\left(\frac{p - p_o}{q}\right)$
P_R	resultant pressure coefficient $\left(\frac{p_u - p_l}{q}\right)$
q	free-stream dynamic pressure, pounds per square foot
S	total wing area, including area projected through fuselage, (150 sq ft)
S'/2	area of a single wing panel outboard of row 1 (57.5 sq ft)
W	airplane weight, pounds
x	chordwise distance aft of leading edge, feet
y	spanwise distance outboard of airplane center line, feet
y'	spanwise distance outboard of row 1, feet
δ_{a_R}	deflection of right aileron, degrees

Subscripts:

l	lower wing surface
u	upper wing surface

DESCRIPTION OF AIRPLANE AND TEST PANEL

The Douglas D-558-I research airplane is a single-place low-wing monoplane powered by a General Electric TG-180 turbojet engine. Figure 1

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presents three photographs of the airplane, and figure 2 shows a three-view drawing giving the general over-all dimensions of the airplane. The airplane has an untwisted, 10-percent-thick wing and has a taper ratio of 0.54, an aspect ratio of 4.17, and an incidence angle of 2°. It has an NACA 65-110 airfoil section from root to tip. The ordinates of the airfoil section are given in table I, and the chordwise location of the pressure-measuring orifices are given in table II. The 50-percent-chord line is perpendicular to the longitudinal axis of the airplane.

INSTRUMENTATION

Synchronized NACA instruments were used to record time histories of the following quantities:

Airspeed
Altitude
Normal acceleration
Rolling angular velocity
Aileron position
Yaw angle
Wing resultant and individual pressures

The airspeed head and the yaw vane were mounted on booms 1 chord ahead of the right and left wing tips, respectively. The airspeed system of the airplane was calibrated by the low-altitude fly-by and radar methods of reference 1.

Wing surface pressures were measured by two NACA recording 60-cell manometers. Flush-type orifices installed in the right-wing skin were connected to the instrument compartment by $\frac{1}{8}$-inch-inside-diameter aluminum tubing; $\frac{3}{16}$-inch-inside-diameter rubber tubing was used between the aluminum tubing and the manometer cells. The length of the aluminum tubing varied from about 6 feet at the root station to about 14 feet at the tip station. About 4 feet of rubber tubing were used on each line.

ACCURACY

The accuracy of the test results is estimated to be within the following limits:

Mach number	±0.01
P and P_R	±0.02
c_n	±0.03
$c_{m_{c/4}}$	±0.006

[redacted]

TESTS

The data presented herein were obtained from a 1 g stall at subcritical Mach numbers, a speed run to a Mach number of 0.90, and a wind-up turn at a Mach number of 0.86. The 1 g stall was executed at approximately 15,000 feet and was performed by gradually slowing up until the airplane stalled. The speed run was started at approximately 37,000 feet and a Mach number of 0.70. After diving to about 33,000 feet and a Mach number of 0.90, the pilot entered a gradual left turn which he tightened until maximum allowable buffet was reached. The Mach number fell off during the turn to around 0.86 at which some points were obtained at near constant Mach number and increasing C_{N_A}. The ailerons were held near neutral during the maneuvers, and the rolling velocities due to the inherent lateral oscillations of the airplane were low. The resulting changes in the section normal-force coefficients were within the experimental accuracy.

METHODS

The right wing is treated as an isolated panel, and the coefficients obtained from integration of the pressure distributions are based upon the geometric properties of the right-wing panel outboard of row 1 (fig. 3). Row 1 is approximately 6 inches outboard of the wing-fuselage junction and 28.75 inches outboard of the center line of the airplane.

The pressure differential between the upper and lower wing surfaces was measured at rows 1, 2, 3, 4, and 6 (fig. 3). Individual surface pressures were measured at row 5 relative to the instrument compartment pressure, and the instrument compartment pressure was measured relative to the boom static pressure, which was corrected to free-stream static pressure by use of the radar tracking method of reference 1.

Ground checks showed that lag due to orifice tube length was negligible. Lag in the airspeed recording system was calculated by the method presented in reference 2 for photographic instruments. In the speed run and wind-up turn considerable lag was present in the airspeed recording system, because both pilot's and recording instruments were connected to the right wing boom. Corrections for this lag were applied to the Mach numbers and q. For the 1 g stall the lag was negligible, because the pilot used a separate airspeed system.

Section coefficients were obtained by mechanical integration of the chordwise pressure distributions. Panel coefficients were obtained by mechanical integration of spanwise plots of the section coefficients.

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PRESENTATION OF DATA

The measured pressure coefficients and aerodynamic characteristics are presented for a 1 g stall at subcritical Mach numbers in table III, for a speed run to a Mach number of 0.90 in table IV, and for a wind-up turn at a Mach number of 0.86 in table V. Blank spaces in these tables represent disconnected orifices (see table II), or orifices whose cells were inoperative. In tables III(c), III(d), III(e), III(f), and III(g) the leading-edge orifice of row 5 went off scale in the negative direction. It was connected to a cell which recorded only positive pressures.

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REFERENCES

1. Zalovcik, John A.: A Radar Method of Calibrating Airspeed Installations on Airplanes in Maneuvers at High Altitudes and at Transonic and Supersonic Speeds. NACA TN 1979, 1949.

2. Huston, Wilber B.: Accuracy of Airspeed Measurements and Flight Calibration Procedures. NACA Rep. 919, 1948.

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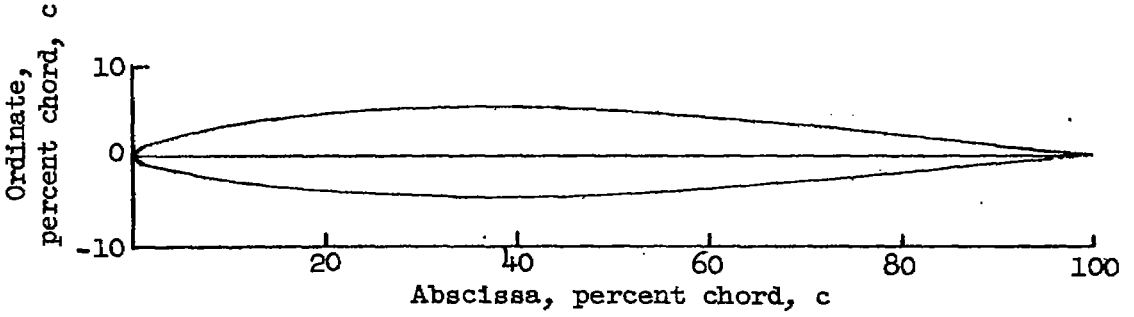
TABLE I

PROFILE AND ORDINATES OF THE AIRFOIL SECTION

[Abscissa and ordinates in percent of local chord, c]



NACA 65-110 airfoil section		
Abscissa, percent chord, c	Ordinate, percent chord, c	
	Upper surface	Lower surface
0	0	0
.50	.796	-.746
.75	.966	-.896
1.25	1.222	-1.115
2.50	1.667	-1.481
5.00	2.334	-2.018
7.50	2.859	-2.435
10.00	3.298	-2.781
15.00	4.002	-3.329
20.00	4.541	-3.745
25.00	4.951	-4.056
30.00	5.246	-4.274
35.00	5.439	-4.409
40.00	5.532	-4.461
45.00	5.511	-4.416
50.00	5.364	-4.261
55.00	5.078	-3.983
60.00	4.682	-3.611
65.00	4.197	-3.167
70.00	3.642	-2.670
75.00	3.032	-2.137
80.00	2.385	-1.589
85.00	1.721	-1.048
90.00	1.068	-.551
95.00	.464	-.148
100.00	0	0
L.E. radius = 0.687 percent chord, c		

TABLE II

CHORDWISE LOCATION OF THE PRESSURE MEASURING ORIFICES

(a) Row 1; $2\frac{y}{b} = 0.192$; c = 7.54 feet

Complete profile survey				Differential survey	
Upper surface		Lower surface		Between surfaces	
Orifice	Exact percent chord	Orifice	Exact percent chord	Orifice pair	Average percent chord
--	-----	1	0.0663	1	00.07
2	1.73	3	1.53	2-3	1.63
4	3.65	5	3.18	4-5	3.42
6	5.57	7	4.91	6-7	5.24
8	7.29	9	9.08	8-9	8.18
10	20.2	11	21.2	10-11	20.7
12	'	13	*	12-13	-----
14	35.4	15	35.2	14-15	35.3
16	'	17	*	16-17	-----
18	46.3	19	46.0	18-19	46.2
20	49.0	21	48.8	20-21	48.9
22	55.0	23	56.9	22-23	56.0
24	*	25	'	24-25	-----
26	65.0	27	66.2	26-27	65.6
28	70.7	29	70.7	28-29	70.7
30	75.6	31	75.1	30-31	75.3
32	80.0	33	80.8	32-33	80.8
34	85.1	35	85.0	34-35	85.1
36	90.2	37	89.9	36-37	90.1
38	95.5	39	95.3	38-39	95.4
40	'	--	-----	40	-----

* Plugged.
' Not connected.

TABLE II

CHORDWISE LOCATION OF THE PRESSURE MEASURING ORIFICES - Continued

(b) Row 2; $2\frac{y}{b} = 0.360$; c = 6.55 feet

Complete profile survey				Differential survey	
Upper surface		Lower surface		Between surfaces	
Orifice	Exact percent chord	Orifice	Exact percent chord	Orifice pair	Average percent chord
--	-----	1	'	1	----
2	1.37	3	1.83	2-3	1.6
4	3.00	5	3.36	4-5	3.2
6	4.7	7	5.0	6-7	4.9
8	8.9	9	8.9	8-9	8.9
10	17.0	11	17.5	10-11	17.2
12	28.5	13	28.5	12-13	28.5
14	35.0	15	*	14-15	----
16	38.5	17	38.6	16-17	38.6
18	46.0	19	46.0	18-19	46.0
20	'	21	*	20-21	----
22	54.6	23	55.3	22-23	55.0
24	60.0	25	60.0	24-25	60.0
26	64.8	27	64.6	26-27	64.7
28	70.0	29	70.0	28-29	70.0
30	74.8	31	75.2	30-31	75.0
32	79.8	33	80.0	32-33	79.9
34	85.0	35	84.7	34-35	84.9
36	90.0	37	90.0	36-37	90.0
38	95.0	39	95.0	38-39	95.0
40	'	--	----	40	----

* Plugged.
' Not connected.

TABLE II

CHORDWISE LOCATION OF THE PRESSURE MEASURING ORIFICES - Continued

(c) Row 3; $2\frac{y}{b} = 0.493$; c = 6.09 feet

Complete profile survey				Differential survey	
Upper surface		Lower surface		Between surfaces	
Orifice	Exact percent chord	Orifice	Exact percent chord	Orifice pair	Average percent chord
--	-----	1	0	1	----
2	1.31	3	1.81	2-3	1.5
4	3.12	5	3.28	4-5	3.2
6	4.9	7	5.26	6-7	5.1
8	8.9	9	9.04	8-9	9.0
10	19.9	11	20.4	10-11	20.1
12	28.3	13	28.6	12-13	28.5
14	'	15	*	14-15	----
16	38.6	17	38.7	16-17	38.7
18	45.8	19	45.8	18-19	45.8
20	50.1	21	50.6	20-21	50.3
22	*	23	'	22-23	----
24	60.0	25	60.1	24-25	50.0
26	64.9	27	65.2	26-27	65.0
28	70.1	29	70.0	28-29	70.0
30	*	31	'	30-31	----
32	79.7	33	79.8	32-33	79.8
34	84.8	35	84.9	34-35	84.9
36	*	37	'	36-37	----
38	94.8	39	94.6	38-39	94.5
40	*	--	----	40	----

* Plugged.
' Not connected.

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TABLE II

CHORDWISE LOCATION OF THE PRESSURE MEASURING ORIFICES - Continued

(d) Row 4; $2\frac{y}{b} = 0.644$; c = 5.52 feet

Complete profile survey				Differential survey	
Upper surface		Lower surface		Between surfaces	
Orifice	Exact percent chord	Orifice	Exact percent chord	Orifice pair	Average percent chord
--	-----	1	0	1	----
2	1.27	3	1.45	2-3	1.3
4	3.08	5	3.45	4-5	3.3
6	5.08	7	5.08	6-7	5.1
8	9.1	9	9.06	8-9	9.1
10	20.0	11	20.7	10-11	20.3
12	28.3	13	28.1	12-13	28.2
14	35.0	15	33.9	14-15	34.5
16	38.9	17	39.1	16-17	39.0
18	46.7	19	46.4	18-19	46.6
20	50.2	21	50.8	20-21	50.5
22	'	23	*	22-23	----
24	60.0	25	60.2	24-25	60.1
26	65.0	27	65.4	26-27	65.2
28	69.8	29	70.8	28-29	70.3
30	75.4	31	75.0	30-31	75.2
32	*	33	*	32-33	----
34	*	35	*	34-35	----
36	89.5	37	89.8	36-47	89.7
38	95.2	39	94.6	38-39	94.9
40	'	--	----	40	----

* Plugged.
' Not connected.

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TABLE II

CHORDWISE LOCATION OF THE PRESSURE MEASURING ORIFICES - Continued

(e) Row 5; $2\frac{y}{b} = 0.777$; c = 5.02 feet

Complete profile survey				Differential survey	
Upper surface		Lower surface		Between surfaces	
Orifice	Exact percent chord	Orifice	Exact percent chord	Orifice pair	Average percent chord
--	-----	1	----	1	----
2	1.0	3	1.2	2-3	1.1
4	3.0	5	3.0	4-5	3.0
6	5.0	7	5.0	6-7	5.0
8	9.0	9	9.0	8-9	9.0
10	19.9	11	19.9	10-11	19.9
12	28.3	13	28.1	12-13	28.2
14	35.1	15	*	14-15	----
16	39.1	17	39.0	16-17	39.1
18	46.4	19	46.4	18-19	46.4
20	50.4	21	52.0	20-21	51.2
22	55.4	23	55.6	22-23	55.5
24	60.4	25	60.2	24-25	60.3
26	65.1	27	65.2	26-27	65.2
28	70.3	29	70.3	28-29	70.3
30	75.1	31	75.3	30-31	75.2
32	80.0	33	80.4	32-33	80.2
34	86.2	35	85.9	34-35	86.0
36	90.6	37	90.4	36-37	90.5
38	95.8	39	95.8	38-39	95.8
40	98.8	--	----	40	98.8

* Plugged.
† Not connected.

TABLE II

CHORDWISE LOCATION OF THE PRESSURE MEASURING ORIFICES - Concluded

(f) Row 6; $2\frac{y}{b} = 0.940$; c = 4.46 feet

Complete profile survey				Differential survey	
Upper surface		Lower surface		Between surfaces	
Orifice	Exact percent chord	Orifice	Exact percent chord	Orifice pair	Average percent chord
--	-----	1	0	1	-----
2	1.35	3	1.35	2-3	1.35
4	3.15	5	2.9	4-5	3.0
6	4.9	7	5.2	6-7	5.0
8	9.0	9	8.5	8-9	8.7
10	20.4	11	21.6	10-11	21.0
12	*	13	'	12-13	-----
14	*	15	'	14-15	-----
16	*	17	'	16-17	-----
18	*	19	'	18-19	-----
20	*	21	'	20-21	-----
22	*	23	'	22-23	-----
24	60.5	25	60.8	24-25	60.7
26	'	27	'	26-27	-----
28	'	29	'	28-29	-----
30	75.4	31	75.6	30-31	75.5
32	*	33	*	32-33	-----
34	86.1	35	86.1	34-35	86.1
36	90.2	37	90.4	36-37	90.3
38	95.2	39	94.5	38-39	94.8
40	'	--	----	40	-----

* Plugged.
' Not connected.

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TABLE III

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; 1 g STALL; M ≈ SUBCRITICAL

(a) M = 0.512; C_{N_A} = 0.291; δ_{a_R} = 0.3° up

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	0.795	-------
2-3	-1.159	-1.551	-1.591	-1.534	-0.921	.534	-1.307
4-5	-.898	-1.091	-1.057	-1.046	-.665	.420	-------
6-7	-.773	-.886	-------	-.886	-.625	.273	-.290
8-9	-.648	-.744	-.761	-.705	-.546	.125	-.426
10-11	-.381	-.494	-.517	-.511	-.517	-.046	-.278
12-13	-------	-.421	-.426	-.398	-.409	-.119	-------
14-15	-.386	-------	-------	-.358	-.443	-----	-------
16-17	-------	-.318	-.358	-.352	-.500	-.148	-------
18-19	-.324	-.273	-.284	-.233	-.449	-.193	-------
20-21	-.267	-------	-.256	-.210	-.386	-.165	-------
22-23	-------	-.193	-------	-------	-.369	-.159	-------
24-25	-------	-.199	-.199	-.182	-.250	-.136	-.080
26-27	-.148	-.153	-.170	-.165	-.193	-.119	-------
28-29	-.108	-.108	-.148	-.119	-.148	-.034	-------
30-31	-.125	-.091	-------	-.057	-.080	-.017	-.045
32-33	-------	-.148	-------	-------	-.029	.017	-------
34-35	-.097	-------	-.091	-------	.023	.051	-.176
36-37	-------	-.097	-------	-.040	.085	.102	-.051
38-39	-.057	-.045	-.074	-------	.142	.159	.000
40	-------	-------	-------	-------	.153	-----	-------

Section aerodynamic characteristics						
c_n	0.308	0.330	0.347	0.313	0.289	0.196
$c_{m_{c/4}}$	-0.0148	-0.0090	-0.0119	-0.0006	0.0020	0.0035

Panel aerodynamic characteristics		
$C_{N'}$ = 0.302	$C_{M'}$ = -0.0056	$C.P._{y'}$ = 41.7
$C_{B'}$ = 0.126	$C.P._x$ = 26.9	

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TABLE III

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; 1 g STALL; M ≈ SUBCRITICAL - Continued

(b) M = 0.452; C_{N_A} = 0.388; δ_{a_R} = 0.1° up

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	0.424	------
2-3	-1.590	-2.174	-2.144	-2.189	-1.394	.682	-1.780
4-5	-1.248	-1.500	-1.462	-1.417	-.879	.545	------
6-7	-1.052	-1.227	-------	-1.197	-.803	.386	-.417
8-9	-.879	-.977	-1.015	-.924	-.697	.212	-.568
10-11	-.538	-.651	-.651	-.644	-.583	.015	-.341
12-13	-------	-.561	-.545	-.515	-.455	-.068	------
14-15	-.485	-------	-------	-.439	-.470	-----	------
16-17	-------	-.394	-.447	-.432	-.500	-.106	------
18-19	-.394	-.326	-.356	-.303	-.470	-.152	------
20-21	-.341	-------	-.318	-.273	-.409	-.129	------
22-23	-------	-.250	-------	-------	-.379	-.136	------
24-25	-------	-.242	-.242	-.212	-.273	-.114	-.106
26-27	-.197	-.205	-.205	-.182	-.227	-.091	------
28-29	-.129	-.144	-.174	-.144	-.167	-.023	------
30-31	-.152	-.121	-------	-.083	-.106	-.015	-.076
32-33	-------	-.205	-------	-------	-.045	.023	------
34-35	-.114	-------	-.114	-------	-.015	.068	-.227
36-37	-------	-.114	-------	-.068	.068	.098	-.068
38-39	-.076	-.053	-.076	-------	.121	.152	-.023
40	-------	-------	-------	-------	.129	-----	------

Section aerodynamic characteristics						
c_n	0.396	0.429	0.438	0.408	0.370	0.261
$c_{m_{c/4}}$	-0.0164	-0.0093	-0.0071	0.0010	0.0000	-0.0068

Panel aerodynamic characteristics		
C_N' = 0.386 C_B' = 0.162	C_M' = -0.0049 $C.P._x$ = 26.3	$C.P._{y'}$ = 42.0

TABLE III

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; 1 g STALL; M ≈ SUBCRITICAL - Continued

(c) $M = 0.438$; $C_{N_A} = 0.492$; $\delta_{a_R} = 0.2^\circ$ up

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	0.025	------
2-3	-2.016	-2.616	-2.675	-2.533	-1.491	.809	-2.283
4-5	-1.550	-1.916	-1.850	-1.825	-1.150	.659	------
6-7	-1.317	-1.567	-------	-1.517	-1.000	.500	-.575
8-9	-1.133	-1.225	-1.250	-1.158	-.816	.309	-.725
10-11	-.667	-.817	-.792	-.792	-.650	.075	-.450
12-13	-------	-.683	-.650	-.617	-.508	-.016	------
14-15	-.567	-------	-------	-.525	-.508	-----	------
16-17	-------	-.483	-.533	-.517	-.541	-.058	------
18-19	-.467	-.408	-.417	-.375	-.491	-.108	------
20-21	-.400	-------	-.383	-.317	-.425	-.100	------
22-23	-------	-.283	-------	-------	-.400	-.116	------
24-25	-------	-.283	-.292	-.267	-.291	-.091	-.133
26-27	-.217	-.242	-.242	-.217	-.231	-.083	------
28-29	-.167	-.175	-.217	-.175	-.175	-.008	------
30-31	-.183	-.133	-------	-.117	-.108	-.008	-.100
32-33	-------	-.250	-------	-------	-.050	.042	------
34-35	-.133	-------	-.125	-------	-.016	.067	-.292
36-37	-------	-.125	-------	-.075	.067	.100	-.092
38-39	-.058	-.058	-.083	-------	.109	.159	-.033
40	-------	-------	-------	-------	.125	-----	------

Section aerodynamic characteristics						
c_n	0.488	0.526	0.540	0.498	0.456	0.330
$c_{m_{c/4}}$	-0.0142	-0.0084	-0.0084	-0.0004	0.0013	-0.0100

Panel aerodynamic characteristics		
$C_N' = 0.476$ $C_B' = 0.203$	$C_M' = -0.0037$ $C.P._x = 25.8$	$C.P._{y'} = 42.7$

[redacted]

TABLE III

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; 1 g STALL; M ≈ SUBCRITICAL - Continued

(d) M = 0.409; C_{N_A} = 0.592; δ_{a_R} = 0.1° up

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	-----	------
2-3	-2.452	-3.250	-3.336	-2.981	-1.953	0.893	-2.452
4-5	-1.913	-2.346	-2.260	-2.211	-1.453	.749	------
6-7	-1.606	-1.904	-------	-1.798	-1.232	.586	-.750
8-9	-1.394	-1.442	-1.510	-1.375	-.982	.374	-.894
10-11	-.827	-.981	-.952	-.952	-.741	.124	-.529
12-13	-------	-.788	-.750	-.750	-.587	.038	------
14-15	-.654	-------	-------	-.635	-.597	-----	------
16-17	-------	-.567	-.615	-.615	-.607	-.039	------
18-19	-.558	-.490	-.500	-.442	-.559	-.107	------
20-21	-.481	-------	-.452	-.385	-.491	-.097	------
22-23	-------	-.327	-------	-------	-.443	-.107	------
24-25	-------	-.327	-.327	-.308	-.357	-.087	-.173
26-27	-.250	-.279	-.279	-.250	-.280	-.087	------
28-29	-.192	-.202	-.250	-.202	-.222	-.020	------
30-31	-.192	-.154	-------	-.135	-.136	-.011	-.135
32-33	-------	-.288	-------	-------	-.088	.018	------
34-35	-.144	-------	-.144	-------	-.039	.057	-.298
36-37	-------	-.144	-------	-.087	.038	.076	-.135
38-39	-.067	-.067	-.087	-------	.076	.143	-.058
40	-------	-------	-------	-------	.086	-----	------

Section aerodynamic characteristics						
c_n	0.576	0.626	0.646	0.600	0.556	0.380
$c_{m_{c/4}}$	-0.0122	-0.0081	-0.0074	0.0010	0.0035	-0.0132

Panel aerodynamic characteristics		
C_N' = 0.575	C_M' = -0.0016	$C.P._{y'}$ = 42.2
C_B' = 0.242	$C.P._x$ = 25.3	

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TABLE III

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; 1 g STALL; M ≈ SUBCRITICAL - Continued

(e) M = 0.329; C_{N_A} = 0.623; δ_{a_R} = 0.1° up

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	-----	------
2-3	-2.561	-3.394	-3.440	-3.182	-2.058	0.972	-2.424
4-5	-2.015	-2.455	-2.349	-2.303	-1.452	.866	------
6-7	-1.667	-1.970	-1.985	-1.909	-1.179	.700	-.485
8-9	-1.455	-1.515	-1.561	-1.424	-.891	.472	-.894
10-11	.894	-.985	-.970	-.955	-.634	.245	-.530
12-13	-------	-.818	-.758	-.758	-.497	.139	------
14-15	-.682	-------	-------	-.636	-.497	-----	------
16-17	-------	-.576	-.621	-.606	-.482	.078	------
18-19	-.545	-.470	-.500	-.485	-.452	.018	------
20-21	-.485	-------	-.455	-.409	-.391	.033	------
22-23	-------	-.349	-------	-------	-.331	.018	------
24-25	-------	-.349	-.333	-.318	-.240	.003	-.212
26-27	-.273	-.303	-.303	-.288	-.179	.018	------
28-29	-.197	-.212	-.258	-.212	-.119	.078	------
30-31	-.182	-.167	-------	-.152	-.073	.094	-.182
32-33	-------	-.273	-------	-------	.003	.109	------
34-35	-.152	-------	-.167	-------	-.058	.169	-.303
36-37	-------	-.152	-------	-.091	.124	.169	-.152
38-39	-.061	-.091	-.121	-------	.154	.215	-.076
40	-------	-------	-------	-------	.154	-----	------

Section aerodynamic characteristics						
c_n	0.613	0.645	0.658	0.621	0.574	0.394
$c_{m_{c/4}}$	-0.0138	-0.0058	-0.0087	0.0000	-0.0010	-0.0196

Panel aerodynamic characteristics		
C_N' = 0.588	C_M' = -0.0041	$C.P._{y'}$ = 42.7
C_B' = 0.251	$C.P._x$ = 25.7	

TABLE III

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; 1 g STALL; M ≈ SUBCRITICAL - Continued

(f) M = 0.315; C_{N_A} = 0.708; δ_{a_R} = 0.2° up

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	-----	------
2-3	-3.017	-4.121	-4.086	-3.828	-2.637	1.035	-2.931
4-5	-2.379	-2.897	-2.759	-2.742	-1.793	.897	------
6-7	-1.948	-2.310	-2.259	-2.224	-1.431	.776	-.621
8-9	-1.724	-1.759	-1.828	-1.655	-1.051	.535	-1.069
10-11	-1.138	-1.172	-1.104	-1.121	-.741	.276	-.603
12-13	-------	-.931	-.879	-.862	-.569	.156	------
14-15	-.741	-------	-------	-.741	-.551	-----	------
16-17	-------	-.655	-.707	-.724	-.517	.104	------
18-19	-.621	-.552	-.569	-.552	-.482	.035	------
20-21	-.569	-------	-.517	-.466	-.448	.052	------
22-23	-------	-.397	-------	-------	-.396	.035	------
24-25	-------	-.397	-.379	-.362	-.310	.018	-.241
26-27	-.310	-.259	-.345	-.293	-.224	.035	------
28-29	-.241	-.241	-.310	-.241	-.172	.104	------
30-31	-.207	-.190	-------	-.172	-.103	.087	-.207
32-33	-------	-.276	-------	-------	-.017	.121	------
34-35	-.172	-------	-.190	-------	-.086	.156	-.362
36-37	-------	-.172	-------	-.121	.087	.156	-.190
38-39	-.052	-.103	-.103	-------	.121	.190	-.103
40	-------	-------	-------	-------	.121	-----	------

Section aerodynamic characteristics						
c_n	0.705	0.757	0.760	0.721	0.682	0.466
$c_{m_{c/4}}$	-0.0119	-0.0003	-0.0087	-0.0010	-0.0019	-0.0235

Panel aerodynamic characteristics		
C_N' = 0.688	C_M' = -0.0029	$C.P._{y'}$ = 43.1
C_B' = 0.296	$C.P._x$ = 25.4	

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TABLE III

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS

OF THE D-558-I WING; 1 g STALL; M ≈ SUBCRITICAL - Concluded

(g) $M = 0.292$; $C_{N_A} = 0.877$; $\delta_{a_R} = 0.0^\circ$

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	-----	------
2-3	-3.865	-5.019	-5.173	-4.884	-3.556	1.079	-3.750
4-5	-3.827	-3.461	-3.423	-3.461	-2.383	1.040	------
6-7	-3.000	-2.769	-------	-2.808	-1.864	.905	-.903
8-9	-2.461	-2.115	-2.211	-2.077	-1.345	.675	-1.346
10-11	-1.346	-1.404	-1.346	-1.365	-.921	.367	-.808
12-13	-------	-1.115	-1.077	-1.077	-.691	.213	------
14-15	-.865	-------	-------	-.885	-.652	-----	------
16-17	-------	-.769	-.827	-.865	-.595	.155	------
18-19	-.692	-.654	-.673	-.673	-.556	.079	------
20-21	-.596	-------	-.596	-.538	-.518	.059	------
22-23	-------	-.442	-------	-------	-.441	.059	------
24-25	-------	-.404	-.404	-.442	-.364	.021	-.308
26-27	-.288	-.385	-.346	-.308	-.268	.021	------
28-29	-.308	-.308	-.327	-.308	-.210	.098	------
30-31	-.231	-.212	-------	-.212	-.133	.117	-.269
32-33	-------	-.288	-------	-------	-.037	.136	------
34-35	-.192	-------	-.192	-------	-.075	.194	-.500
36-37	-------	-.250	-------	-.135	.059	.175	-.250
38-39	-.115	-.173	-.135	-------	.098	.194	-.154
40	-------	-------	-------	-------	.079	-----	------

Section aerodynamic characteristics						
c_n	0.880	0.911	0.915	0.892	0.842	0.613
$c_{m_{c/4}}$	0.0064	-0.0026	0.0016	0.0035	0.0006	-0.0306

Panel aerodynamic characteristics		
$C_N' = 0.848$	$C_M' = 0.0008$	$C.P._{y'} = 43.0$
$C_B' = 0.365$	$C.P._x = 25.1$	

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TABLE IV

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; SPEED RUN AT $C_{N_A} = 0.23 \pm 0.04$

(a) $M = 0.742$; $C_{N_A} = 0.213$; $\delta_{a_R} = 0.0°$

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	1.065	-------
2-3	-0.617	-0.911	-0.926	-0.864	-0.501	.425	-0.911
4-5	-.540	-.787	-------	-.818	-.538	.279	-------
6-7	-.556	-.679	-------	-.664	-.479	.166	-.401
8-9	-.432	-.556	-.617	-.556	-.547	.016	-.293
10-11	-.284	-.370	-.401	-.370	-.439	-.158	-.232
12-13	-------	-.370	-.401	-.370	-.454	-.198	-------
14-15	-.358	-------	-------	-.309	-.501	-.300	-------
16-17	-------	-.324	-.355	-.370	-.562	-.244	-------
18-19	-.340	-.278	-.293	-.185	-.578	-.285	-------
20-21	-.383	-------	-.247	-.185	-.423	-.263	-------
22-23	-------	-.124	-.170	-------	-.979	-.238	-------
24-25	-------	-.201	-.154	-.108	-.285	-.184	-.093
26-27	-.114	-.108	-.124	-.139	-.223	-.177	-------
28-29	-------	-.062	-.093	-.062	-.146	-.053	-------
30-31	-.062	-.046	-------	.000	-.053	-.022	-.015
32-33	-------	-.108	-------	-------	-.038	.009	-------
34-35	-.077	-------	-.062	-------	.055	.024	-------
36-37	-------	-.062	-------	-.015	.080	.117	-.031
38-39	-.046	-.031	-.031	-------	.179	.200	.000
40	-------	-------	-------	-------	.203	-----	-------

Section aerodynamic characteristics						
c_n	0.246	0.259	0.279	0.237	0.218	0.155
$c_{m_{c/4}}$	-0.0226	-0.0110	-0.0094	0.0022	0.0010	-0.0008

Panel aerodynamic characteristics		
$C_N' = 0.232$ $C_B' = 0.097$	$C_M' = -0.0057$ $C.P._x = 27.4$	$C.P._{y'} = 41.9$

TABLE IV

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; SPEED RUN AT $C_{N_A} = 0.23 \pm 0.04$ - Continued

(b) $M = 0.759$; $C_{N_A} = 0.218$; $\delta_{a_R} = 0.0°$

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	1.073	-------
2-3	-0.601	-0.880	-0.968	-0.865	-0.526	.425	-0.938
4-5	-.543	-.777	-------	-.821	-.546	.300	-------
6-7	-.499	-.719	-------	-.689	-.508	.164	-.396
8-9	-.425	-.572	-.645	-.587	-.573	.021	-.293
10-11	-.282	-.381	-.440	-.411	-.463	-.159	-.264
12-13	-------	-.425	-.440	-.367	-.455	-.218	-------
14-15	-.387	-------	-------	-.337	-.529	-.323	-------
16-17	-------	-.381	-.411	-.440	-.602	-.265	-------
18-19	-.367	-.308	-.308	-.205	-.617	-.323	-------
20-21	-.411	-------	-.242	-.205	-.455	-.392	-------
22-23	-------	-.117	-.147	-------	-.924	-.265	-------
24-25	-------	-.191	-------	-.103	-.309	-.206	-.088
26-27	-.123	-.103	-.117	-.132	-.221	-.177	-------
28-29	-------	-.059	-.103	-.059	-.147	-.059	-------
30-31	-.059	-.044	-------	.000	-.074	-.015	-.015
32-33	-------	-.088	-------	-------	-.074	.014	-------
34-35	-.073	-------	-.059	-------	.036	.029	-------
36-37	-------	-.059	-------	-.029	.082	.117	-.044
38-39	-.044	-.029	-.029	-------	.181	.196	.000
40	-------	-------	-------	-------	.205	-----	-------

Section aerodynamic characteristics						
c_n	0.253	0.269	0.297	0.249	0.228	0.164
$c_{m_{c/4}}$	-0.0234	-0.0110	-0.0077	0.0003	0.0008	-0.0013

Panel aerodynamic characteristics		
$C_{N'} = 0.244$ $C_{B'} = 0.102$	$C_{M'} = -0.0056$ $C.P._x = 27.4$	$C.P._{y'} = 41.9$

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TABLE IV

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; SPEED RUN AT $C_{N_A} = 0.23 \pm 0.04$ - Continued

(c) $M = 0.778$; $C_{N_A} = 0.291$; $\delta_{a_R} = 0.0°$

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	1.087	-------
2-3	-0.712	-1.014	-1.014	-0.945	-0.521	.465	-1.041
4-5	-.616	-.877	-------	-.918	-.581	.328	-------
6-7	-.575	-.795	-------	-.712	-.529	.202	-.384
8-9	-.493	-.644	-.740	-.685	-.644	.054	-.370
10-11	-.356	-.493	-.548	-.521	-.569	-.148	-.301
12-13	-------	-.507	-.507	-.384	-.535	-.228	-------
14-15	-.466	-------	-------	-.274	-.548	-.321	-------
16-17	-------	-.438	-.466	-.397	-.631	-.264	-------
18-19	-.466	-.438	-.288	-.315	-.781	-.343	-------
20-21	-.584	-------	-.425	-.370	-.562	-.283	-------
22-23	-------	-.082	-.123	-------	-.836	-.288	-------
24-25	-------	-.178	-.137	-.082	-.275	-.213	-.082
26-27	-.115	-.096	-.096	-.123	-.206	-.179	-------
28-29	-------	-.041	-.082	-.055	-.138	-.055	-------
30-31	-.082	-.041	-------	.006	-.055	-.028	-.027
32-33	-------	-.082	-------	-------	-.069	.013	-------
34-35	-.069	-------	-.055	-------	.075	.041	-------
36-37	-------	-.055	-------	-.014	.095	.123	-.041
38-39	-.055	-.041	-.041	-------	.191	.197	.000
40	-------	-------	-------	-------	.211	-----	-------

Section aerodynamic characteristics						
c_n	0.292	0.319	0.336	0.287	0.264	0.185
$c_{m_{c/4}}$	-0.0244	-0.0109	-0.0071	-0.0002	0.0030	-0.0010

Panel aerodynamic characteristics		
$C_N' = 0.282$ $C_B' = 0.117$	$C_M' = -0.0050$ $C.P._x = 27.3$	$C.P._{y'} = 41.6$

[redacted]

TABLE IV

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; SPEED RUN AT $C_{N_A} = 0.23 \pm 0.04$ - Continued

(d) $M = 0.796$; $C_{N_A} = 0.287$; $\delta_{a_R} = 0.1^\circ$ down

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	1.089	-------
2-3	-0.702	-1.008	-1.071	-0.944	-0.516	.479	-1.071
4-5	-.600	-.893	-------	-.957	-.600	.345	-------
6-7	-.549	-.804	-------	-.714	-.544	.211	-.370
8-9	-.510	-.612	-.765	-.702	-.643	.058	-.383
10-11	-.347	-.510	-.587	-.574	-.682	-.156	-.344
12-13	-------	-.510	-.574	-.459	-.656	-.217	-------
14-15	-.520	-------	------	-.536	-.669	-.335	-------
16-17	-------	-.510	-.510	-.587	-.707	-.281	-------
18-19	-.549	-.497	-.497	-.332	-.809	-.375	-------
20-21	-.671	-------	-.612	-.421	-.694	-.304	-------
22-23	-------	-.166	-.179	-------	-.720	-.286	-------
24-25	-------	-.089	-.102	-.051	-.261	-.210	-.128
26-27	-.077	-.038	-.064	-.089	-.197	-.197	-------
28-29	-------	-.026	-.051	-.026	-.120	-.069	-------
30-31	-.051	-.013	-------	.026	-.057	-.031	-.026
32-33	-------	-.077	-------	-------	-.082	.020	-------
34-35	-.064	-------	-.038	-------	.065	.046	-------
36-37	-------	-.051	-------	-.013	.097	.122	-.051
38-39	-.038	-.026	-.038	-------	.191	.199	.000
40	-------	-------	-------	-------	.219	-----	-------

Section aerodynamic characteristics						
c_n	0.312	0.333	0.365	0.316	0.304	0.209
$c_{m_{c/4}}$	-0.0263	-0.0111	-0.0074	0.0006	0.0002	-0.0050

Panel aerodynamic characteristics		
$C_{N'} = 0.307$ $C_{B'} = 0.130$	$C_{M'} = -0.0063$ $C.P._{x} = 27.0$	$C.P._{y'} = 42.3$

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TABLE IV

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; SPEED RUN AT $C_{N_A} = 0.23 \pm 0.04$ - Continued

(e) $M = 0.819$; $C_{N_A} = 0.251$; $\delta_{a_R} = 0.1^\circ$ down

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	1.126	-------
2-3	-0.520	-0.709	-0.0780	-0.674	-0.323	.407	-0.804
4-5	-.473	-.650	-------	-.662	-.404	.283	-------
6-7	-.449	-.615	-------	-.567	-.394	.173	-.355
8-9	-.378	-.485	-.579	-.520	-.515	.017	-.272
10-11	-.258	-.378	-.461	-.414	-.580	-.184	-.296
12-13	-------	-.402	-.473	-.449	-.609	-.255	-------
14-15	-.426	-------	-------	-.426	-.657	-.394	-------
16-17	-------	-.402	-.426	-.497	-.763	-.309	-------
18-19	-.402	-.378	-.355	-.272	-.810	-.468	-------
20-21	-.589	-------	-.544	-.449	-.763	-.326	-------
22-23	-------	-.508	-.556	-------	-1.059	-.314	-------
24-25	-------	-.343	-.366	-.272	-.385	-.243	-.095
26-27	-.118	-.106	-.154	-.130	-.196	-.196	-------
28-29	-------	-.024	-.047	.012	-.089	-.066	-------
30-31	-.047	.024	-------	.071	-.030	-.007	-.012
32-33	-------	-.024	-------	-------	-.066	.041	-------
34-35	-.047	-------	-.012	-------	.112	.053	-------
36-37	-------	-.036	-------	.000	.124	.135	-.047
38-39	-.036	-.024	-.024	-------	.216	.206	.000
40	-------	------	-------	-------	.237	-----	-------

Section aerodynamic characteristics						
c_n	0.250	0.282	0.321	0.271	0.252	0.165
$c_{m_{c/4}}$	-0.0246	-0.0174	-0.0174	-0.0062	-0.0041	-0.0028

Panel aerodynamic characteristics		
$C_N' = 0.259$ $C_B' = 0.109$	$C_M' = -0.0113$ $C.P._x = 29.4$	$C.P._{y'} = 42.1$

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TABLE IV

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; SPEED RUN AT $C_{N_A} = 0.23 \pm 0.04$ - Continued

(f) $M = 0.835$; $C_{N_A} = 0.215$; $\delta_{a_R} = 0.1^\circ$ down

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	1.143	-------
2-3	-0.437	-0.538	-0.617	-0.505	-0.192	.380	-0.650
4-5	-.381	-.516	-------	-.516	-.288	.251	-------
6-7	-.359	-.471	-------	-.448	-.313	.138	-.314
8-9	-.292	-.404	-.460	-.415	-.438	.010	-.224
10-11	-.197	-.303	-.370	-.336	-.528	-.205	-.247
12-13	-------	-.359	-.415	-.426	-.573	-.268	-------
14-15	-.368	-------	-------	-.370	-.629	-.409	-------
16-17	-------	-.269	-.258	-.280	-.752	-.452	-------
18-19	-.336	-.314	-.303	-.224	-.831	-.427	-------
20-21	-.460	-------	-.348	-.224	-.786	-.514	-------
22-23	-------	-.336	-.348	-------	-1.021	-.348	-------
24-25	-------	-.740	-.718	-.661	-.786	-.225	-.235
26-27	-.213	-.224	-.269	-.292	-.326	-.180	-------
28-29	-------	-.168	-.235	-.112	-.158	-.057	-------
30-31	-.090	-.101	-------	.022	-.046	-.023	-.011
32-33	-------	.000	-------	-------	-.057	.033	-------
34-35	-.056	-------	-.022	-------	.156	.044	-------
36-37	-------	-.034	-------	.022	.140	.145	-.045
38-39	-.034	-.022	-.022	-------	.221	.223	.000
40	-------	-------	-------	-------	.253	-----	-------

Section aerodynamic characteristics						
c_n	0.231	0.258	0.286	0.252	0.243	0.184
$c_{m_{c/4}}$	-0.0312	-0.0279	-0.0266	-0.0188	-0.0169	-0.0154

Panel aerodynamic characteristics		
$C_N' = 0.244$ $C_B' = 0.106$	$C_M' = -0.0221$ $C.P._x = 34.1$	$C.P._{y'} = 43.3$

TABLE IV

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; SPEED RUN AT $C_{N_A} = 0.23 \pm 0.04$ - Continued

(g) $M = 0.856$; $C_{N_A} = 0.227$; $\delta_{a_R} = 0.0°$

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	1.159	-------
2-3	-0.459	-0.564	-0.637	-0.522	-0.177	.392	-0.658
4-5	-.397	-.522	-------	-.543	-.271	.288	-------
6-7	-.365	-.512	-------	-.449	-.285	.168	-.324
8-9	-.324	-.397	-.480	-.428	-.422	.022	-.209
10-11	-.207	.303	-.386	-.334	-.511	-.187	-.271
12-13	-------	-.355	-.418	-.449	-.594	-.248	-------
14-15	-.376	-------	-------	-.376	-.605	-.381	-------
16-17	-------	-.282	-.292	-.313	-.751	-.452	-------
18-19	-.334	-.292	-.251	-.219	-.866	-.511	-------
20-21	-.449	-------	-.282	-.157	-.793	-.567	-------
22-23	-------	-.230	-.282	-------	-.991	-.594	-------
24-25	-------	-.230	-.292	-.251	-.876	-.579	-.292
26-27	-.257	-.230	-.324	-.240	-.396	-.198	-------
28-29	-------	-.313	-.345	-.251	-.292	-.041	-------
30-31	-.240	-.313	-------	-.255	-.166	.001	-.031
32-33	-------	-.188	-------	-------	-.073	.032	-------
34-35	-.125	-------	-.073	-------	.115	.060	-------
36-37	-------	-.094	-------	-.240	.132	.147	-.021
38-39	-.063	-.052	-.042	-------	.209	.209	.000
40	-------	-------	-------	-------	.237	-----	-------

Section aerodynamic characteristics						
c_n	0.262	0.269	0.290	0.256	0.244	0.201
$c_{m_{c/4}}$	-0.0462	-0.0374	-0.0316	-0.0351	-0.0203	-0.0198

Panel aerodynamic characteristics		
$C_{N'} = 0.250$	$C_{M'} = -0.0313$	$C.P._{y'} = 43.2$
$C_{B'} = 0.108$	$C.P._x = 37.5$	

TABLE IV

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; SPEED RUN AT $C_{N_A} = 0.23 \pm 0.04$ - Continued

(h) $M = 0.875$; $C_{N_A} = 0.226$; $\delta_{a_R} = 0.1^\circ$ up

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	1.158	-------
2-3	-0.530	-0.663	-0.710	-0.587	-0.207	.438	-0.720
4-5	-.455	-.606	-------	-.625	-.283	.334	-------
6-7	-.426	-.587	-------	-.445	-.306	.212	-.379
8-9	-.369	-.474	-.549	-.474	-.423	-.060	-.256
10-11	-.273	-.397	-.426	-.379	-.537	-.158	-.303
12-13	-------	-.445	-.483	-.502	-.603	-.213	-------
14-15	-.417	-------	-------	-.407	-.641	-.353	-------
16-17	-------	-.341	-.313	-.341	-.764	-.437	-------
18-19	-.350	-.294	-.284	-.246	-.868	-.499	-------
20-21	-.477	-------	-.303	-.199	-.812	-.560	-------
22-23	-------	-.256	-.294	-------	-.887	-.594	-------
24-25	-------	-.133	-.284	-.360	-.528	-.632	-.114
26-27	-.278	.265	.133	-.180	-.404	-.670	-------
28-29	-------	.142	.038	.237	-.376	-.376	-------
30-31	-.161	-.227	-------	-.208	-.329	-.092	-.085
32-33	-------	-.265	-------	-------	-.187	.003	-------
34-35	-.208	-------	-.133	-------	-.101	.107	-------
36-37	-------	-.275	-------	-.322	-.026	.135	-.047
38-39	-.133	-.189	-.085	-------	.084	.202	.000
40	-------	-------	-------	-------	.130	-----	-------

Section aerodynamic characteristics						
c_n	0.218	0.280	0.279	0.238	0.250	0.182
$c_{m_{c/4}}$	-0.0221	-0.0312	-0.0170	-0.0214	-0.0207	-0.0112

Panel aerodynamic characteristics		
$C_N' = 0.248$ $C_B' = 0.105$	$C_M' = -0.0210$ $C.P._x = 33.5$	$C.P._{y'} = 42.4$

TABLE IV

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; SPEED RUN AT $C_{N_A} = 0.23 \pm 0.04$ - Continued

(i) $M = 0.881$; $C_{N_A} = 0.212$; $\delta_{a_R} = 0.1^\circ$ up

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	1.150	-------
2-3	-0.556	-0.692	-0.747	-0.634	-0.225	.463	-0.765
4-5	-.474	-.638	-------	-.665	-.294	.354	-------
6-7	-.437	-.601	-------	-.455	-.316	.238	-.401
8-9	-.373	-.492	-.574	-.501	-.434	.080	-.273
10-11	-.273	-.419	-.446	-.392	-.535	-.134	-.310
12-13	-------	-.455	-.501	-.519	-.598	-.205	-------
14-15	-.423	-------	-------	-.428	-.644	-.329	-------
16-17	-------	-.364	-.328	-.355	-.753	-.420	-------
18-19	-.392	-.310	-.301	-.273	-.862	-.489	-------
20-21	-.497	-------	-.328	-.200	-.826	-.547	-------
22-23	-------	-.255	-.301	-------	-.826	-.626	-------
24-25	-------	-.064	-.301	.373	-.462	-.635	-.109
26-27	-.295	-.264	.118	.146	-.389	-.662	-------
28-29	-------	-.364	.264	.228	-.389	-.635	-------
30-31	.000	-.073	-------	.264	-.352	-.316	.082
32-33	-------	-.164	-------	-------	-.243	-.088	-------
34-35	-.200	-------	-.100	-------	-.148	.058	-------
36-37	-------	-.264	-------	.346	-.121	.112	-.027
38-39	-.155	-.182	-.073	-------	.021	.172	.000
40	-------	-------	-------	-------	.067	-----	-------

Section aerodynamic characteristics						
c_n	0.211	0.256	0.267	0.203	0.221	0.164
$c_{m_{c/4}}$	-0.0152	-0.0167	-0.0063	0.0017	-0.0038	0.0026

Panel aerodynamic characteristics		
$C_N' = 0.223$ $C_B' = 0.094$	$C_M' = -0.0066$ $C.P._x = 27.9$	$C.P._{y'} = 42.2$

TABLE IV

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; SPEED RUN AT C_{N_A} = 0.23 ± 0.04 - Concluded

(j) M = 0.895; C_{N_A} = 0.265; δ_{a_R} = 0.7° down

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	1.131	-------
2-3	-0.731	-0.941	-0.983	-0.866	-0.335	.564	-0.974
4-5	-.613	-.891	-------	-.950	-.475	.347	-------
6-7	-.563	-.815	-------	-.706	-.406	.332	-.689
8-9	-.479	-.714	-.698	-.597	-.495	.165	-.235
10-11	-.350	-.538	-.597	-.513	-.579	-.064	-.370
12-13	-------	-.445	-.546	-.597	-.638	-.132	-------
14-15	-.504	-------	-------	-.538	-.696	-.280	-------
16-17	-------	-.454	-.445	-.445	-.772	-.360	-------
18-19	-.454	-.412	-.378	-.361	-.873	-.427	-------
20-21	-.555	-------	-.403	-.286	-.831	-.490	-------
22-23	-------	-.311	.059	-------	-.411	-.520	-------
24-25	-------	-.034	-------	-.177	-.402	-.583	-.160
26-27	-.234	.202	.210	-.050	-.394	-.629	-------
28-29	-------	.311	.227	.126	-.402	-.579	-------
30-31	-.160	.395	-------	.373	-.402	-.621	.256
32-33	-------	-.034	-------	-------	-.352	-.327	-------
34-35	-.153	-------	-.185	-------	-.318	.001	-------
36-37	-------	-.151	-------	-.118	-.271	.060	-.109
38-39	-.151	-.143	-.261	-------	-.184	.107	-.059
40	-------	-------	-------	-------	-.115	-----	-------

Section aerodynamic characteristics						
c_n	0.276	0.276	0.300	0.276	0.284	0.189
$c_{m_{c/4}}$	-0.0229	0.0070	-0.0013	0.0086	-0.0072	0.0086

Panel aerodynamic characteristics		
C_N' = 0.265	C_M' = -0.0019	$C.P._{y'}$ = 42.9
C_B' = 0.114	$C.P._x$ = 24.3	

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TABLE V

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; WIND-UP-TURN AT $M \approx 0.60$

(a) $M = 0.856$; $C_{N_A} = 0.227$; $\delta_{a_R} = 0.0^\circ$

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	1.159	-------
2-3	-0.459	-0.564	-0.637	-0.522	-0.177	.392	-0.658
4-5	-.397	-.522	-------	-.543	-.271	.288	-------
6-7	-.365	-.512	-------	-.449	-.285	.168	-.324
8-9	-.324	-.397	-.480	-.428	-.422	.022	-.209
10-11	-.207	-.303	-.386	-.334	-.511	-.187	-.271
12-13	-------	-.355	-.418	-.449	-.594	-.248	-------
14-15	-.376	-------	-------	-.376	-.605	-.381	-------
16-17	-------	-.282	-.292	-.313	-.751	-.452	-------
18-19	-.334	-.292	-.251	-.219	-.866	-.511	-------
20-21	-.449	-------	-.282	-.157	-.793	-.567	-------
22-23	-------	-.230	-.282	-------	-.991	-.594	-------
24-25	-------	-.230	-.292	-.251	-.876	-.579	-.292
26-27	-.257	-.230	-.324	-.240	-.396	-.198	-------
28-29	-------	-.313	-.345	-.251	-.292	-.041	-------
30-31	-.240	-.313	-------	-.255	-.166	.001	-.031
32-33	-------	-.188	-------	-------	-.073	.032	-------
34-35	-.125	-------	-.073	-------	.115	.060	-------
36-37	-------	-.094	-------	-.240	.132	.147	-.021
38-39	-.063	-.052	-.042	-------	.209	.209	.000
40	-------	-------	-------	-------	.237	-----	-------

Section aerodynamic characteristics						
c_n	0.262	0.269	0.290	0.256	0.244	0.201
$c_{m_{c/4}}$	-0.0462	-0.0374	-0.0316	-0.0351	-0.0203	-0.0198

Panel aerodynamic characteristics		
$C_N' = 0.250$ $C_B' = 0.108$	$C_M' = -0.0313$ $C.P._x = 37.5$	$C.P._{y'} = 43.2$

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TABLE V

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; WIND-UP-TURN AT $M \approx 0.60$ - Continued

(b) $M = 0.862$; $C_{N_A} = 0.512$; $\delta_{a_R} = 0.4^\circ$ down

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	0.999	-------
2-3	-1.632	-1.503	-1.535	-0.1471	-0.776	.715	-1.479
4-5	-.973	-1.431	-------	-1.431	-.845	.582	-------
6-7	-.981	-1.334	-------	-1.238	-.794	.449	-1.150
8-9	-.836	-1.182	-1.150	-1.093	-.857	.265	-.908
10-11	-.621	-1.021	-.908	-.908	-.848	.012	-.539
12-13	-------	-.820	-.924	-.868	-.937	-.111	-------
14-15	-.841	-------	-------	-.828	-.961	-.252	-------
16-17	-------	-.780	-.876	-.764	-1.057	-.204	-------
18-19	-.619	-.289	-.732	-.064	-1.130	-.358	-------
20-21	-.342	-------	-.498	.072	-1.017	-.477	-------
22-23	-------	.048	-.129	-------	-.639	-.527	-------
24-25	-------	.129	-------	.145	-.567	-.531	-.273
26-27	-.024	.113	.072	-.105	-.495	-.623	-------
28-29	-------	-.306	-.265	-.314	-.382	-.141	-------
30-31	-.233	-.322	-------	-.379	-.302	-.053	-.129
32-33	-------	-.322	-------	-------	-.246	-.037	-------
34-35	-.257	-------	-.249	-------	-.101	.052	-------
36-37	-------	-.370	-------	-.442	-.101	.076	-.137
38-39	-.265	-.322	-.185	-------	-.019	.127	-.088
40	-------	-------	-------	-------	.004	-----	-------

Section aerodynamic characteristics						
c_n	0.458	0.539	0.573	0.524	0.549	0.399
$c_{m_{c/4}}$	-0.0350	-0.0326	-0.0297	-0.0443	-0.0269	-0.0184

Panel aerodynamic characteristics		
$C_N' = 0.512$ $C_B' = 0.226$	$C_M' = -0.0293$ $C.P._x = 30.8$	$C.P._{y'} = 44.0$

TABLE V

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; WIND-UP-TURN AT $M \approx 0.60$ - Continued

(c) $M = 0.858$; $C_{N_A} = 0.550$; $\delta_{a_R} = 0.9^\circ$ down

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	0.956	-------
2-3	-1.835	-1.654	-1.677	-1.606	-0.867	.759	-1.598
4-5	-1.029	-1.567	-------	-1.551	-.923	.641	-------
6-7	-1.068	-1.456	-------	-1.369	-.863	.489	-1.242
8-9	-.942	-1.305	-1.274	-1.203	-.950	.308	-1.068
10-11	-.690	-1.155	-1.013	-1.021	-.934	.039	-.609
12-13	-------	-.902	-1.013	-.965	-.989	-.078	-------
14-15	-.926	-------	-------	-.641	-1.021	-.228	-------
16-17	-------	-.862	-.973	-.396	-1.108	-.192	-------
18-19	-.293	-.253	-.799	-.079	-1.203	-.356	-------
20-21	-.313	-------	-.348	.016	-1.052	-.473	-------
22-23	-------	.048	-.237	-------	-.649	-.518	-------
24-25	-------	.119	-------	.063	-.570	-.526	-.324
26-27	-.158	-.166	-.142	-.301	-.467	-.467	-------
28-29	-------	-.293	-.206	-.340	-.340	-.119	-------
30-31	-.245	-.317	-------	-.351	-.261	-.079	-.142
32-33	-------	-.301	-------	-------	-.198	-.064	-------
34-35	-.285	-------	-.24[illegible]	-------	-.147	.047	-------
36-37	-------	-.380	-------	-.459	-.116	.063	-.182
38-29	-.285	-.309	-.198	-------	-.035	.115	-.103
40	-------	-------	-------	-------	-.008	-----	-------

Section aerodynamic characteristics						
c_n	0.504	0.588	0.643	0.551	0.610	0.458
$c_{m_{c/4}}$	-0.0431	-0.0334	-0.0365	-0.0442	-0.0281	-0.0229

Panel aerodynamic characteristics		
$C_{N'} = 0.561$ $C_{B'} = 0.250$	$C_{M'} = -0.0331$ $C.P._x = 30.9$	$C.P._{y'} = 44.6$

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TABLE V

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; WIND-UP-TURN AT $M \approx 0.60$ - Continued

(d) $M = 0.855$; $C_{N_A} = 0.602$; $\delta_{a_R} = 0.4^\circ$ down

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	0.891	-------
2-3	-1.988	-1.809	-1.848	-1.778	-0.987	.808	-1.762
4-5	-1.196	-1.716	-------	-1.685	-1.026	.680	-------
6-7	-1.157	-1.615	-------	-1.584	-.970	.544	-1.413
8-9	-1.033	-1.429	-1.413	-1.351	-1.040	.354	-1.227
10-11	-.767	-1.266	-1.134	-1.149	-1.016	.079	-.714
12-13	-------	-1.203	-1.103	-1.009	-1.071	-.052	-------
14-15	-.983	-------	-------	-.412	-1.102	-.184	-------
16-17	-------	-.947	-1.064	-.380	-1.195	-.173	-------
18-19	-.326	-.318	-.567	-.124	-1.234	-.349	-------
20-21	-.376	-------	-.427	-.016	-.838	-.454	-------
22-23	-------	-.016	-.202	-------	-.636	-.488	-------
24-25	-------	-.085	-------	-.031	-.512	-.469	-.373
26-27	-.196	-.233	-.163	-.318	-.356	-.481	-------
28-29	-------	-.287	-.233	-.326	-.279	-.154	-------
30-31	-.287	-.295	-------	-.323	-.263	-.131	-.132
32-33	-------	-.204	-------	-------	-.248	-.116	-------
34-35	-.326	-------	-.295	-------	-.294	-.116	-------
36-37	-------	-.311	-------	-.443	-.224	-.007	-.148
38-39	-.311	-.303	-.241	-------	-.120	.068	-.101
40	-------	-------	-------	-------	-.080	-----	-------

Section aerodynamic characteristics						
c_n	0.570	0.663	0.694	0.589	0.637	0.509
$c_{m_{c/4}}$	-0.0506	-0.0279	-0.0382	-0.0430	-0.0188	-0.0203

Panel aerodynamic characteristics		
$C_N' = 0.611$ $C_B' = 0.269$	$C_M' = -0.0313$ $C.P._x = 30.1$	$C.P._{y'} = 44.0$

TABLE V

TABULATION OF PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF THE D-558-I WING; WIND-UP-TURN AT $M \approx 0.60$ - Concluded

(e) $M = 0.854$; $C_{N_A} = 0.650$; $\delta_{a_R} = 0.6^\circ$ down

Orifice number	Pressure coefficients						
	Row 1	Row 2	Row 3	Row 4	Row 5		Row 6
					Upper	Lower	
1	-------	-------	-------	-------	------	0.848	-------
2-3	-2.092	-1.897	-1.942	-1.889	-1.068	.843	-1.844
4-5	-1.417	-1.829	-------	-1.777	-1.086	.708	-------
6-7	-1.229	-1.724	-------	-1.702	-1.028	.573	-1.507
8-9	-1.095	-1.529	-1.507	-1.454	-1.091	.382	-1.304
10-11	-.832	-1.349	-1.199	-1.222	-1.083	.109	-.780
12-13	-------	-1.334	-1.177	-.795	-1.113	-.024	-------
14-15	-.975	-------	-------	-.472	-1.143	-.152	-------
16-17	-------	-.952	-1.124	-.450	-1.233	-.151	-------
18-19	-.352	.345	-.540	-.180	-1.248	-.341	-------
20-21	-.439	-------	-.480	-.135	-.874	-.434	-------
22-23	-------	-.038	-.195	-------	-.649	-.394	-------
24-25	-------	-.157	-------	-.112	-.499	-.394	-.465
26-27	-.223	-.247	-.232	-.375	-.439	-.454	-------
28-29	-------	-.270	-.262	-.360	-.394	-.161	-------
30-31	-.292	-.285	-------	-.354	-.356	-.131	-.142
32-33	-------	-.274	-------	-------	-.304	-.124	-------
34-35	-.330	-------	-.315	-------	-.323	-.079	-------
36-37	-------	-.345	-------	-.472	-.284	-.004	-.187
38-39	-.307	-.300	-.285	-------	-.169	.056	-.090
40	-------	-------	-------	-------	-.124	-----	-------

Section aerodynamic characteristics						
c_n	0.599	0.724	0.741	0.630	0.709	0.574
$c_{m_{c/4}}$	-0.0514	-0.0360	-0.0432	-0.0497	-0.0342	-0.0306

Panel aerodynamic characteristics		
$C_{N'} = 0.667$ $C_{B'} = 0.297$	$C_{M'} = -0.0377$ $C.P._x = 30.6$	$C.P._{y'} = 44.5$

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[redacted]

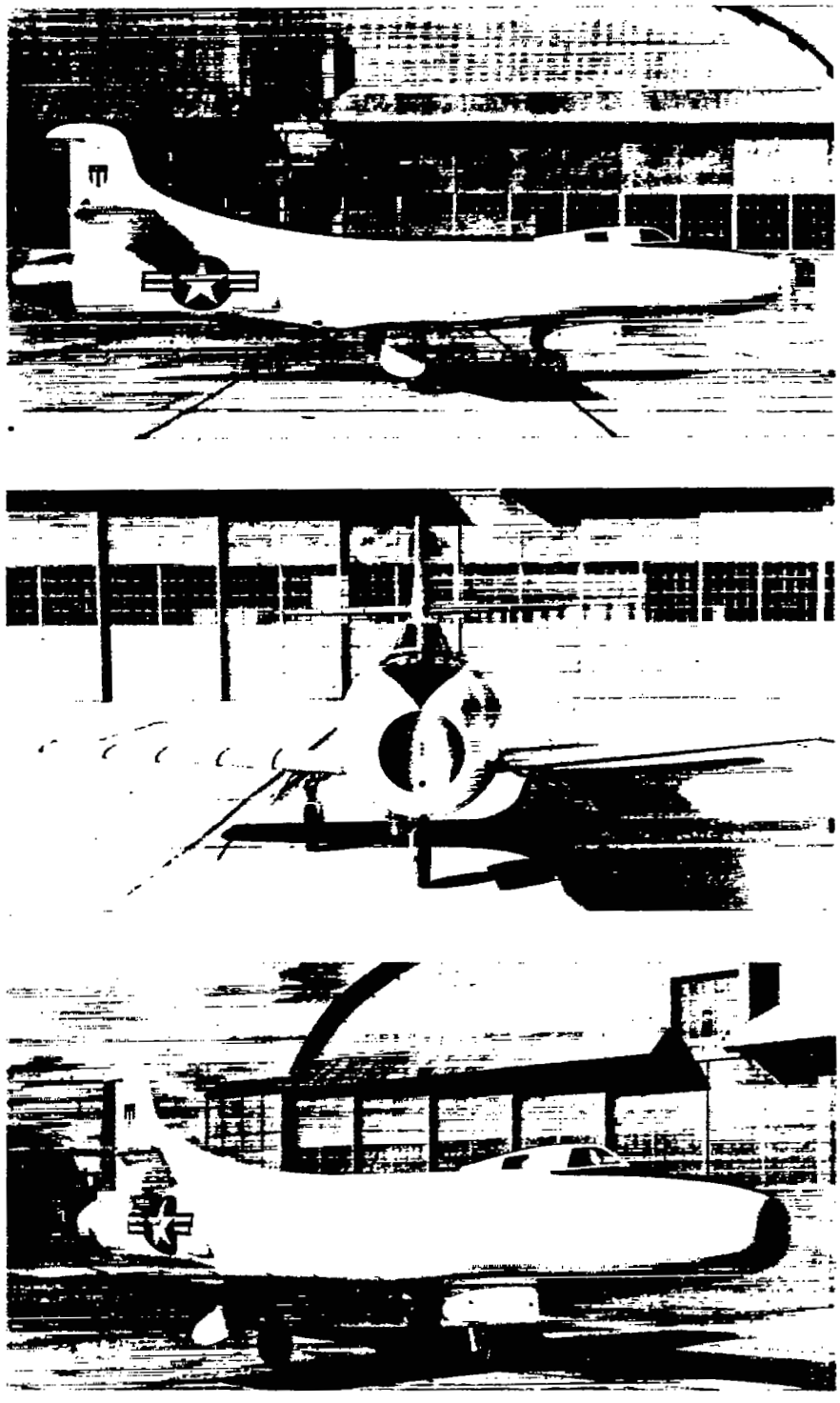

Figure 1.- Photographs of the Douglas D-558-I airplane.

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L-64941

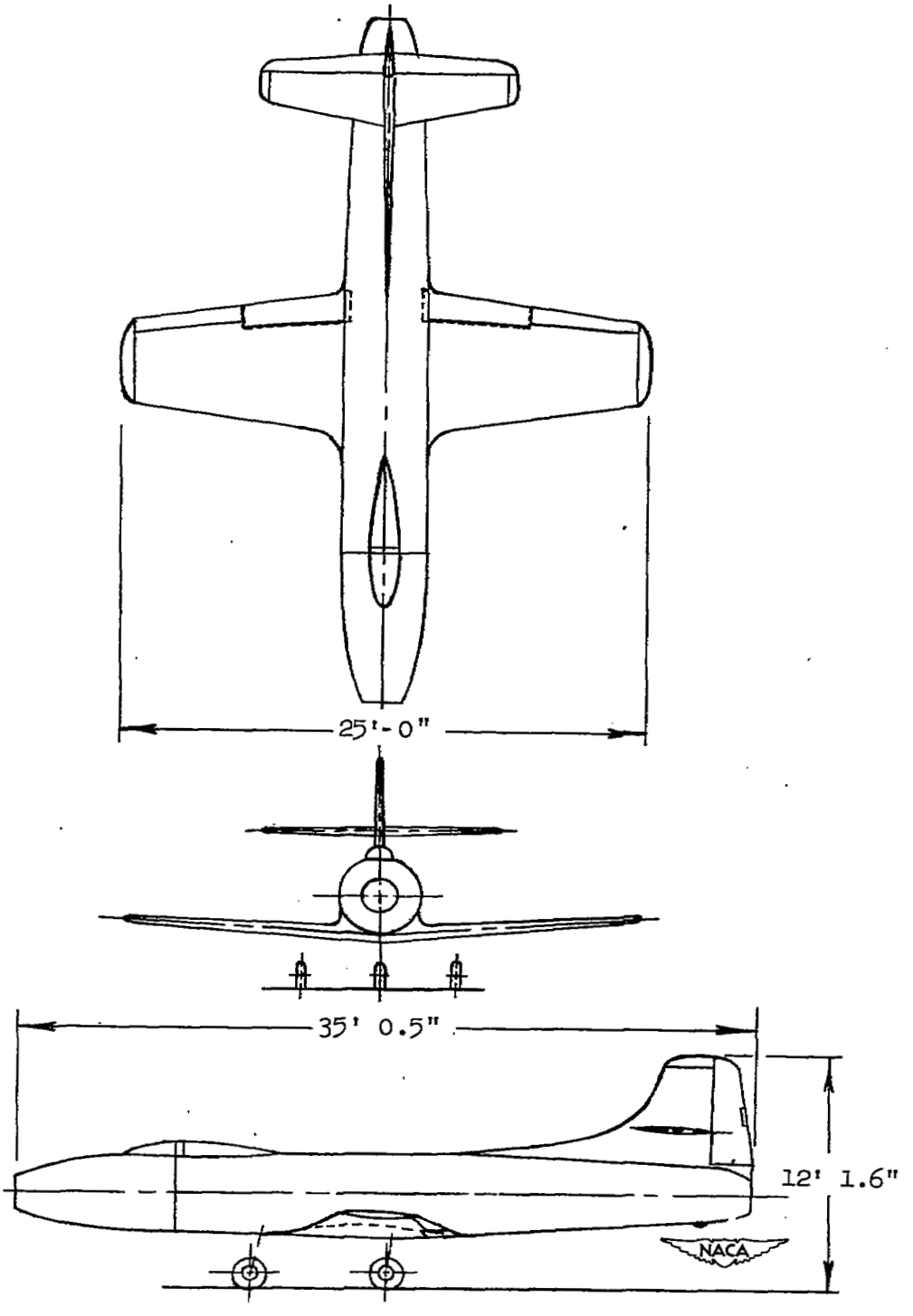

Figure 2.- Three-view drawing of the Douglas D-558-I airplane.

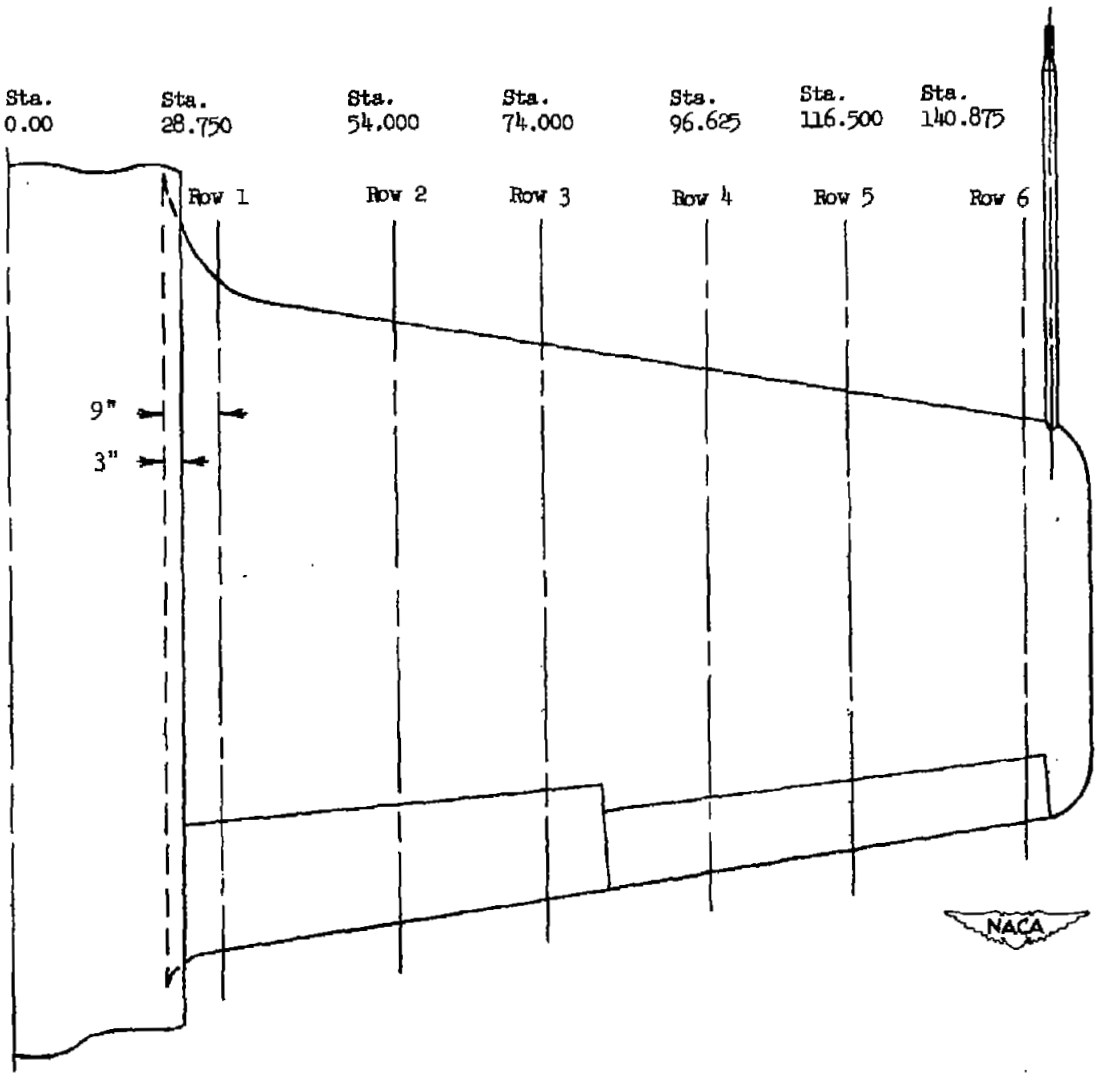

Figure 3.- Spanwise location of pressure-measuring orifices.